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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/528,795	03/23/2005	Kenzo Ishibashi	92478-1500	9154

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EXAMINER	
RIVERO, MINERVA	
ART UNIT	**PAPER NUMBER**
2627	

DATE MAILED: 07/26/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/528,795	ISHIBASHI ET AL.	
	Examiner	Art Unit	
	Minerva Rivero	2627	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 March 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-9* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-9* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *23 March 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Claim Rejections - 35 USC § 101

2. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

3. Claim 9 is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Claim 9 is drawn to a "program" *per se* as recited in the preamble and as such is non-statutory subject matter. See MPEP § 2106.IV.B.1.a. Data structures not claimed as embodied in computer readable media are descriptive material *per se* and are not statutory because they are not capable of causing functional change in the computer. See, e.g., *Warmerdam*, 33 F.3d at 1361, 31 USPQ2d at 1760 (claim to a data structure *per se* held nonstatutory). Such claimed data structures do not define any structural and functional interrelationships between the data structure and other claimed aspects

of the invention, which permit the data structure's functionality to be realized. In contrast, a claimed computer readable medium encoded with a data structure defines structural and functional interrelationships between the data structure and the computer software and hardware components which permit the data structure's functionality to be realized, and is thus statutory. Similarly, computer programs claimed as computer listings *per se*, i.e., the descriptions or expressions of the programs are not physical "things." They are neither computer components nor statutory processes, as they are not "acts" being performed. Such claimed computer programs do not define any structural and functional interrelationships between the computer program and other claimed elements of a computer, which permit the computer program's functionality to be realized.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Funamoto (US 5,587,986), in view of Kasai *et al.* (US 4,866,687), hereinafter Kasai.

6. Regarding claims 1,8 and 9, Funamoto discloses a tracking control apparatus for an optical disc which has wobble grooves as tracks (Col. 4, Lines 24-30), comprising:

a signal detection unit operable to detect a tracking error signal and a wobble signal from an optical spot focused on the optical disc (Col. 6, Lines 1-6) and

a polarity judgment unit operable to judge, by a polarity judgment, that the optical spot is on a land if a wobble signal amplitude value is equal to or lower than a predetermined value in vicinity of a zero-cross point (Col. 3, Lines 39-47).

However, Funamoto does not explicitly disclose but Kasai does disclose a speed calculation unit operable to calculate, in a tracking-off state, a relative moving speed between the optical spot and the tracks, from (i) a zero-cross point cycle in the tracking error signal and (ii) a track pitch (*seek operation*, Col. 2, Lines 50-55; *the relative speed between the light spot and track can be known, track pitch p and polarity*, Col. 7, Lines 47-66; Col. 15, Lines 62-65), and a moving direction judgment unit operable to, when the relative moving speed is within a predetermined range and the polarity judgment has judged that the optical spot is on a land, judge a moving direction of the optical spot relative to the tracks, from a rise/decay direction of the tracking error signal (*on-track speed, rising/falling of tracking error signal*, Col. 7, Lines 17-39).

Therefore it would have been obvious to one ordinarily skilled in the art at the time of the invention to supplement the teachings of Funamoto and have a speed calculation unit operable to calculate, in a tracking-off state, a relative moving speed between the optical spot and the tracks, from (i) a zero-cross point cycle in the tracking error signal and (ii) a track pitch, and to have a moving direction judgment unit operable

to, when the relative moving speed is within a predetermined range and the polarity judgment has judged that the optical spot is on a land, judge a moving direction of the optical spot relative to the tracks, from a rise/decay direction of the tracking error signal, as disclosed by Kasai, in order to perform speed control, and to be able to calculate the relative speed between the light spot and the track as further disclosed by Kasai (Col. 8, Lines 4-5; Col. 7, Lines 46-50), respectively.

7. Regarding claim 2, Funamoto does not disclose but Kasai does disclose a control unit operable to perform a tracking lead-in by reducing the relative moving speed calculated by the speed calculation unit and the moving direction (Col. 9, Lines 7-9; *deceleration and settling*, Col. 11, Lines 11-18; *optimal speed*, Col. 13, Lines 37-53); and

the moving direction judgment unit judges whether the optical spot is moving from an inner circumference track toward an outer circumference track or from the outer circumference track toward the inner circumference track, according to whether a differential coefficient of the tracking error signal is positive or negative (*rising/falling of tracking error signal*, Col. 7, Lines 17-39).

Therefore it would have been obvious to one ordinarily skilled in the art at the time of the invention to modify the teachings of Funamoto, as disclosed by Kasai in order to control the tracking and seeking operations accordingly.

8. Regarding claim 3, Funamoto does not disclose but Kasai discloses

an eccentricity storing sub-unit operable to calculate an amount of eccentricity per rotation of the optical disc, from a moving speed and a moving direction that are calculated and judged by the speed calculation unit and the moving direction judgment unit based on the tracking error signal corresponding to one-half or more rotation of the optical disc, and to store data of the calculated amount of eccentricity (*cross track control circuit, eccentricity per revolution*, Col. 12, Lines 21-42);

a following operation sub-unit operable to cause the optical spot to follow a specific track among a plurality of eccentricity tracks crossing the optical spot, with timing when the specific track passes the optical spot, based on the amount of eccentricity stored in the eccentricity storing sub-unit (*timing signal is indicated to the servo control circuit*, Col. 12, Lines 43-53); and

a first lead-in sub-unit operable to lead a tracking into the specific track or a track in vicinity of the specific track while the optical spot is following the specific track (*coarse actuator*, Col. 9, Lines 6-18; *target track*, Col. 8, Lines 17-22).

Therefore it would have been obvious to one ordinarily skilled in the art at the time of the invention to modify the teachings of Funamoto and an eccentricity storing sub-unit operable to calculate an amount of eccentricity per rotation of the optical disc, from a moving speed and a moving direction that are calculated and judged by the speed calculation unit and the moving direction judgment unit based on the tracking error signal corresponding to one-half or more rotation of the optical disc, and to store data of the calculated amount of eccentricity, a following operation sub-unit operable to cause the optical spot to follow a specific track among a plurality of eccentricity tracks

crossing the optical spot, with timing when the specific track passes the optical spot, based on the amount of eccentricity stored in the eccentricity storing sub-unit, and a first lead-in sub-unit operable to lead a tracking into the specific track or a track in vicinity of the specific track while the optical spot is following the specific track, as disclosed by Kasai, in order to correctly access a target track.

9. Regarding claim 4, Kasai discloses the specific track is approximately at a center of the plurality of eccentricity tracks (Col. 5, Lines 55-60; Col. 6, Lines 14-20).

Therefore it would have been obvious to one ordinarily skilled in the art at the time of the invention to supplement the teachings of Funamoto by having the specific track be approximately at a center of the plurality of eccentricity tracks since it is an effect of absence of a tracking error.

10. Regarding claim 5, discloses

an eccentricity storing sub-unit operable to calculate an amount of eccentricity per rotation of the optical disc, from a moving speed and a moving direction that are calculated and judged by the speed calculation unit and the moving direction judgment unit based on the tracking error signal corresponding to one-half or more rotation of the optical disc, and to store data of the calculated amount of eccentricity (*cross track control circuit, eccentricity per revolution*, Col. 12, Lines 21-42);

a second following operation sub-unit operable to cause the optical spot to follow a track that is approximately at a center of the plurality of eccentricity tracks, based on

the amount of eccentricity stored in the eccentricity storing sub-unit (*timing signal is indicated to the servo control circuit*, Col. 12, Lines 43-53; *fine actuator*, Col. 9, Lines 6-18); and

a second lead-in sub-unit operable to, with given timing, lead a tracking into the track approximately at the center of the plurality of eccentricity tracks (*fine actuator*, Col. 9, Lines 6-18).

Therefore it would have been obvious to one ordinarily skilled in the art at the time of the invention to modify the teachings of Funamoto and have an eccentricity storing sub-unit operable to calculate an amount of eccentricity per rotation of the optical disc, from a moving speed and a moving direction that are calculated and judged by the speed calculation unit and the moving direction judgment unit based on the tracking error signal corresponding to one-half or more rotation of the optical disc, and to store data of the calculated amount of eccentricity, a second following operation sub-unit operable to cause the optical spot to follow a track that is approximately at a center of the plurality of eccentricity tracks, based on the amount of eccentricity stored in the eccentricity storing sub-unit, and a second lead-in sub-unit operable to, with given timing, lead a tracking into the track approximately at the center of the plurality of eccentricity tracks, as disclosed by Kasai, in order to correctly access a target track.

11. Regarding claim 6, Funamoto discloses an amplitude calculation sub-unit operable to calculate a wobble signal amplitude of a land that is adjacent to a given point on a track of the optical disc, using a reference radius position of a wobble phase,

a track pitch, a wobble length, a track number, and a rotation angle (Col. 4, Lines 24-31), and an amplitude storing sub-unit operable to store, as a measurement data sequence of wobble signal amplitude, moving directions that are judged by the moving direction judgment unit (Col. 1, Lines 28-30); and

an error correction sub-unit operable to correct an error of a groove count value in a middle of a seek of an object track, according to a correlation between (i) a data sequence of wobble signal amplitude values for a plurality of lands crossed by the optical spot that are calculated by the amplitude calculation sub-unit from groove count values counted during the seek of the object track and (ii) the measurement data sequence, using the calculated wobble signal amplitude value data sequence as a template (*detecting an on-track state by comparing wobble pit amplitudes with a reference signal*, Col. 4, Lines 24-35).

However, Funamoto does not explicitly disclose but Kasai does disclose a tracking lead-in at an end of a seek by restricting a moving speed of the optical spot to within the predetermined range (Col. 7, Lines 47-66; *deceleration and settling*, Col. 11, Lines 11-18).

Therefore it would have been obvious to one ordinarily skilled in the art at the time of the invention to modify the teachings of Funamoto and a have a tracking lead-in at an end of a seek by restricting a moving speed of the optical spot to within the predetermined range, as disclosed by Kasai, in order to control a *jump signal* in a track lead-in operation, as further disclosed by Kasai (Col. 14, Lines 2-13).

12. Regarding claim 7, Funamoto discloses

a first judgment sub-unit operable to judge that the optical spot is on a groove if a RF signal amplitude value from the optical disc is equal to or higher than a predetermined value (*tracking error signal is formed from a difference between light amounts*, Col. 1, Lines 22-28; *mean value*, Col. 4, Lines 23-35);

a second judgment sub-unit operable to judge whether the optical spot is on groove or a land based on total light quantity signals from the groove and the land of the optical disc if there is a difference between the total light quantity signals (*tracking error signal is formed from a difference between light amounts*, Col. 1, Lines 22-28); and

a third judgment sub-unit operable to judge whether the optical spot is on a groove or a land based on total light quantity signals from the groove and the land of the optical disc if there is a difference between the total light quantity signals, excluding portions of the optical disc for which the RF signal amplitude value from the optical disc is equal to or higher than the predetermined value (*mean value*, Col. 4, Lines 23-35).

However, Funamoto does not disclose but Kasai does disclose the moving direction judgment unit further judges the moving direction of the optical spot relative to the tracks from the rise/decay direction of the tracking error signal if any of the first to third judgment sub-units judges by a polarity judgment whether the optical spot is on a groove or a land (Col. 6, Lines 14-20).

Therefore it would have been obvious to one ordinarily skilled in the art at the time of the invention to supplement the teachings of Funamoto and have a moving direction judgment unit further judge the moving direction of the optical spot relative to

the tracks from the rise/decay direction of the tracking error signal if any of the first to third judgment sub-units judges by a polarity judgment whether the optical spot is on a groove or a land, as disclosed by Kasai, in order to determine a traversing direction of the light spot across the track, as further disclosed by Kasai (Col. 6, Lines 18-20).

Conclusion

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Kobayashi (US 6,097,695) discloses an optical disk system with a groove defining processing method.

Watanabe *et al.* (US 6,198,718) discloses a disc cartridge and a method for preventing undesirable recording a playback thereof.

Yokogama (US 5,532,988) discloses a tracking apparatus for performing tracking control.

Yamaguchi *et al.* (US 5,566,141) discloses track retrieving method for making a light beam jump and scan from one track to another.

Hirano *et al.* (US 4,544,872) discloses a tracking servo control system for an information read-out system.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Minerva Rivero whose telephone number is (571) 272-7626. The examiner can normally be reached on Monday-Friday 9:00 am - 6:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wayne Young can be reached on (571) 272-7582. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

WAYNE YOUNG
SUPERVISORY PATENT EXAMINER

MR 7/20/06